DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE

NH000-0056-01(061), Fulton County

OFFICE Innovative Program Delivery

SR 400 at CR 145/Northridge Road

DATE September 7, 2012

P.I. #751580-

FROM Darryl D. Var

Darryl D. VanMeter, P.E., State Innovative Program Delivery Engineer

TO

Brent Story, P.E., State Design Policy Engineer

SUBJECT Request for Design Variance – Intersection Skew Less Than 70°

The Office of Innovative Program Delivery recommends approval of the attached Request for Design Exception on the above listed project. The scope of this project is to replace the existing bridge and to make minor operational improvement to the existing ramps. It is likely that future expansion projects on SR 400 will convert this interchange into a split diamond and permanently correct the skew. If you have any questions or require additional information, please contact Marlo Clowers at (404) 631-1713 or by email.

DVM:MLC



Suite 220 2 Sun Court Peachtree Comers, Georgia 30092

September 7, 2012

Brent Story, P.E.
Design Policy and Support Administrator
Georgia Department of Transportation
One Georgia Center
600 West Peachtree Street, NW
Atlanta, Georgia 30308

Subject:

Request for Design Variance

NH000-0056-01(061), Fulton County

P.I. No. 751580-

SR400/US19 @ CR145/Northridge Road

Approval of Design Variance is requested for the above project.

This project consists of approximately 0.4 miles of widening along Northridge Road at SR400 in the City of Sandy Springs. The total length of the project is 0.41 miles. The project will provide capacity and operational improvements to the SR400 ramps at Northridge Road as well as the intersections of Northridge Road at Dunwoody Place and Roberts Drive. Operational improvements will include additional signage for the northbound exit ramp from SR400 and additional through lane on Northridge Road to accommodate improved traffic flow. The project also includes replacing the existing bridge over SR 400 to include provisions for future manage lanes on SR400 and treatments to address wrong way movements at the intersection of Northridge Road and Somerset Court.

A design Variance is requested for intersection skew angles less than 70 degrees. Currently, Roberts Drive intersects Northridge Road with a skew angle of 64° 24° 04.4°; SR400 northbound exit ramp intersects Northridge Road with a skew angle of 63° 23' 59.2°; and SR400 northbound entrance ramp intersects Northridge Road with a skew angle of 64° 26' 08.1°. The three alignments operate with one traffic signal located on Northridge Road. This proposed project will not change any of the existing skews.

According to AASHTO (2011) an intersection should be as close to 90 degrees as practical and an angle of at least 60 degrees provides most of the benefits of a 90-degree intersection angle. GDOT *Design Policy Manual* page 4-3 states "Although a minimum 60-degree intersection angle is permissible by AASHTO standards, it does not provide the benefits of more perpendicular intersections. Therefore, GDOT has adopted a 70-degree skew angle as the minimum skew angle at intersections."

Crash data within proximity of the Northridge Road intersections with the SR400 on- and off- ramps were obtained from the Georgia Department of Transportation for the years 2007, 2008, and 2009. The crash data were obtained for the Northridge corridor between the residential neighborhood driveway directly west of the SR400 southbound ramps and Somerset Court directly east of the SR400 northbound ramps as well as for the tops of the ramps themselves, a segment length of approximately 0.5 miles. The statewide average crash rates for 2009, 2008, and 2007 for an Urban Minor Arterial were 463, 469, and 513 crashes per 100 million vehicle miles traveled and the corridor crash rates were 1687, 1188 and 1033 crashes per 100 million vehicle miles traveled. This shows that the accident rates for this section of Northridge Road, has been consistently higher than the statewide average.

Table 5 Urban Minor Arterial Street Crash Rate Summary			
Total Accidents	2007	2008	2009
Accidents per 100 MVMT	1687	1188	1033
Statewide Accidents per 100 MVMT	513	469	463
Injury Accidents			
Injury Accidents per 100 MVMT	517	275	155
Statewide Injury Accidents per 100 MVMT	126	117	115
Fatalities			
Fatalities per 100 MVMT	17.22	0.00	17.22
Statewide Fatalities per 100 MVMT	1.48	1.47	1.10

Realignment of Roberts Drive, the SR400 northbound exit ramp and the SR400 northbound entrance ramp where they intersect Northridge Road cannot be accomplished due to an upscale subdivision adjacent to the existing roadway.

The estimate right of way cost to realign Roberts Drive is \$8,000,000 (sixteen residences at \$500,000 each). The estimated construction cost to realign approximately 900 LF of Roberts Drive is \$450,000. The estimated right of way cost to realign the SR400 ramps is not a factor. The estimated construction cost for the SR400 ramps is \$250,000.

The installation of added overhead signs, roadside signs, pavement marking (especially chicken tracks) and additional pavement will provide mitigation necessary to lessen the impact of not realigning the SR400 ramps and Roberts Drive as they intersect Northridge Road.

Based on the warranting conditions presented (the existing and proposed geometry, roadway conditions, and accident analysis), I, Gary Newton, P.E. of Kimley-Horn and Associates, Inc., (770) 825-0744, recommended that a Design Exception be approved for the controlling substandard design element.

Submitted By: Su	9-7-12 Date
Recommended: Director of Engineering	9/12/12/ Date
Approved: Occil Man	9124112 Date



